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ATMOSPHERIC PHENOMENA.

I.

LESS than two hundred years ago the atmosphere, like light, was regarded as a subtile fluid, pervading all nature, imponderable and possessing no characteristic of matter. No other gaseous body was believed to exist. Miners were continually harassed by so-called peculiar conditions of the air, some of which summarily choked them, and others, catching fire, blew their bodies to atoms. Knowing no natural causes for these phenomena, the learned and ignorant together referred them to infernal agency, and assumed the existence of spiritual guardians of the treasures. These demons were called *geists*, or ghosts, by the Germans, whence arose the term gas.

In 1757, Dr. Black observed that when vinegar was poured upon chalk there escaped an invisible air, which possessed all the fatal qualities of the choke-damp or suffocating gas of coal-mines. This observation indicated that there were different kinds of air; but it was not sufficient to overcome the popular prejudice, and only after Priestley's magnificent discoveries in pneumatic chemistry, made twenty years later, was a true distinction of gases asserted, and the composite nature of our atmosphere determined.

According to modern discoveries, the atmosphere is a gaseous envelope about the earth, forty-five or fifty miles in depth, and composed principally of two gases, nitrogen and oxygen, mingled in the proportion of four to one. Its density diminishes rapidly with the elevation, so that at a height of three and one-half miles fully one-half of its mass lies below. At this and higher points, the rarity of the air is such as to render breathing exceedingly difficult, and blood is frequently forced from the eyes, nose, and mouth. If at an elevation of four miles a bird be dropped from a balloon, it is unable to fly, and, after a momentary attempt to sustain itself, descends rapidly to a denser stratum.

WINDS.

In the atmosphere, as in the ocean, we find marked currents, arising from the effects of heat. Air, like water, being heated by convection,

these movements result from radiation, and are, therefore, continuous, one portion ascending, the other descending. The descending current may be propagated in various directions, as Capt. Horsburgh* has shown. "I have several times, in fair weather, seen a cloud generate and diffuse a breeze on the sea, which spread out in different directions from the place of descent. A remarkable instance of this occurred in Malacca Strait when a fleet was in company. A breeze commenced suddenly from a dense cloud, and its center of action seemed to be the middle of the fleet, which was much scattered. The breeze spread in every direction from a center, and produced a singular appearance in the fleet, for every ship hauled close to the wind when the breeze reached her, and when it became general, exhibited to view the different ships sailing completely in a circle, though all hauled close to the wind." The same author also states that frequently in *ty-fongs* the wind seems to come from every direction, and waves assume a pyramidal shape, which renders them particularly destructive to ships.

Most writers on meteorology classify winds, according to their mode of occurrence and the time of their duration, into constant, periodical, and variable currents. Of the

CONSTANT WINDS,

the Trades, which blow towards the equator from the northeast and southeast, are by far the most important. These prevail between the equator and tropics, and are bounded by regions of calms. Halley, in his *Theory of the Trade Winds*, refers their origin to the rarefaction of the air at the equator and to the diurnal revolution of the earth. The heated air ascends to the upper regions and passes north and south, while the cooler air from the poles rushes in to sustain the equilibrium. As the earth revolves upon its axis from west to east, the velocity with which any point on the surface moves depends upon its distance from the equator, decreasing towards the poles. The air over any given point moves with the same rapidity as the point itself. Therefore, when drawn to the equator, where the velocity is greater, it is deflected to the west, and appears to come from the east.

This theory seems to be the true one, though apparently opposed by fact. It assumes steady, continuous currents from the poles, whereas we have seen that the trades exist only between the tropics, where they evidently originate in narrow belts of calms, beyond which the prevailing winds tend to the poles. Lieut. Maury thus explains the seeming paradox † Leaving the north pole, a particle of air, for some reason not yet known, travels in the upper atmospheric regions until it reaches latitude 30°, where it meets a particle coming north from the equator to take its

* Nicholson's *Journal*, vol. 15, p. 11.
† *Physical Geography of the Sea*, p. 76.

place. Each particle neutralizes the motion of the other, so as to produce a calm and an accumulation of the atmosphere. Under this bank of calms two surface currents pass out, the northeast trades and the southwest passage winds which prevail between the tropical and polar calms. Having crossed the calm, the northern particle keeps on to the equator, where it meets another particle from the south, and calms again result, forming a zone from four to eight degrees wide, known as the variables. Heated by the radiation at this point, the two particles ascend, cross each other, and, as the upper trades, proceed north and south to descend at the tropical calms, and continue thence as surface winds to the polar regions.

The elevation at which the upper trades originate is unknown. They have never been reached, even at the greatest height attained on the Andes. The upper currents move with great force. On the 24th and 25th of January, 1835, the sun was darkened at Jamaica by a shower of ashes which had been discharged from Coseguina, eight hundred miles distant. This eruption gave a beautiful illustration of the different winds, for at the same time ashes fell on a ship seven hundred miles south of the volcano,* which is situated in or near the variables. The equatorial belt of calms is so absolutely devoid of strong winds that sailing vessels are frequently delayed in it for several weeks. The loss thus sustained was so great that the greater number of the large India vessels are now provided with auxiliary screws, which can be raised or lowered at pleasure.

PERIODICAL WINDS.

The trade-winds are constant only at a considerable distance from land, being altered in their course by the islands and continents over which they pass. By the deserts of Asia and Africa and the Oceanic Islands they are converted into periodical winds called monsoons, which prevail in the Indian Ocean and China Sea, as well as upon the southern coast of Central America and the west coast of Africa. Mrs. Sommerville† thinks the monsoons owe their origin to diminished pressure of the atmosphere at each tropic alternately, whence necessarily results the southwest wind in summer and the northeast in winter. The southwest monsoon, though more violent than the other, is extremely beneficial to the parched regions of India; for in passing over the Indian Ocean it becomes charged with vapors, which are discharged in heavy rains and render the country cool and inhabitable.

The land and sea breezes belong to the periodical winds. They are studied to best advantage upon the ocean islands, and Lieut. Jansen, of the Dutch navy, has given an interesting description and explanation of them. During the day the sun's rays falling upon the land rapidly increase its temperature, while that of the water has advanced but little. The air

* *Heat as a Mode of Motion.* American edition, p. 185.
† *Physical Geography.* American edition, p. 281.

upon the land ascends, and that upon the sea is pressed in to take its place, thus producing the sea-breeze which prevails during the day. At night the reverse occurs. The land throws off its heat more quickly than the sea ; the current of air flows toward the sea, causing the land-breeze during the night. During the rainy season at Java and the neighboring islands the land-breeze is very irregular, as clouds prevent radiation. On the African coast, in the zone of equatorial calms, it never fails ; a very slight fall in temperature suffices to reverse the current, so that the land-breeze is frequently of stifling heat. In the temperate zones the alternation is regular, except in long-continued wet weather.

Over the deserts of Africa and Arabia there prevails a periodical wind, marked by its excessive warmth, and, among the Arabs, is called *Simoom*, or the poisonous. It lasts for forty days, wherefore the Egyptians call it *Khamsin*. The destructive power of this wind is almost incredible ; wherever it passes, plants dry up, evaporation from the skin of animals goes on with such rapidity as to cause extreme suffering, and even whole caravans have been known to perish when in its path. The nature of its poisonous qualities is undetermined. Some writers hold that it contains deleterious vapors or exhalations from the soil. This is unsatisfactory, as appears upon consideration of the country over which it passes ; unless, indeed, we accept the hypothesis that it is a visitor from South America. Dr. Silliman maintains that its heat is sufficient to produce the noxious effects. Heat alone cannot suffice, as the temperature of the wind rarely exceeds 100° F. Very frequently, Chaubert and Sir Francis Chantrey breathed with impunity air heated to 300° F. ; and in porcelain factories women go into the ovens to arrange the ware, the temperature being upwards of 400° F. Mrs. Sommerville offers the supposition that its bad effects are caused chiefly by heated sand carried by the wind.

VARIABLE WINDS.

Of these, hurricanes or cyclones may be taken as the type. They are of interest not only because of their destructive power, but also because they are governed by fixed laws which have been carefully investigated.

Between these rotatory storms and the monsoons there is an unexplained connection. The hurricane season of all seas in the northern hemisphere nearly coincides with that during which monsoons prevail upon the North Indian Ocean, the China Sea, and the coast of Central America. It occurs upon the South Indian in the opposite season, where the northwest monsoon prevails in the East Indian Archipelago. In the seas of the southern hemisphere monsoons do not occur and cyclones are almost unknown.

The portion of atmosphere which forms the hurricane, revolves upon an axis slightly inclined toward the horizon, while the body of the storm is carried forward. There is, therefore, within the vortex a continual admix-

ture of the lower with the upper strata of the atmosphere, so that cyclones are frequently attended by frightful rain-storms. The cause of the revolution is still a fruitful source of discussion. Herschel's explanation is the most satisfactory: when two of the vast barometric waves, which continually move in the upper regions of the air, cross each other, a rotating wind may be caused—just as when two tidal waves cross, eddies and whirlpools result. W. C. Redfield has shown that the rotation, once begun, is maintained by the pressure of external air entering the vortex below and ascending spirally to the top. The direction of rotation is invariable in the same hemisphere—in the north, W.N.E.S.; in the south, W.S.E.N. The rotatory speed of cyclones ranges from seventy-five to one hundred and thirty miles per hour; but the rate of progression rarely exceeds fifteen or twenty miles per hour, and vessels have been known to overtake such storms. In one case a British man-of-war actually sailed through a hurricane.

Within 10° of the equator cyclones rarely occur, for there the air moves but in one direction—upward; north and south of this limit they are more or less prevalent as far as latitude 45°. Starting about 10° or 15° north latitude, a cyclone, with an area varying from fifty to one hundred square miles, moves north and west until it reaches latitude 28° or 30°, the limit of the trades. Here it sweeps round, taking a northeasterly direction, enlarging its area as it goes. Its course at length becomes easterly, and when it reaches but 40° its area is so great, frequently one thousand square miles, that the storm is dispersed.

The destructive power of hurricanes can be well seen only in the torrid zone and the adjacent portions of the temperate. A writer in the *British Quarterly* asserts that in tropical countries one may often see a whole crop of gigantic sugar-canes cleared in a moment, and carried off roots and all by the whirlwind. By the last great cyclone that passed over Ceylon and southern Hindostan, upward of fifty thousand persons were killed. On the African deserts tornadoes (miniature cyclones) raise pillars of sand, frequently two hundred feet high. On the sea they form waterspouts, which dismantle and sometimes even sink large vessels. Where a true cyclone passes over the ocean, the water within the vortex is raised about two feet above its proper level, producing what is termed the "storm-wave." In 1789, the city of Coringa, on the Coromandel coast, with twenty thousand of its inhabitants, was destroyed by a succession of these waves; and again, in 1839, from a like cause, about an equal number perished.

THE real design of education is, to give children resources that will endure as long as life endures; habits that time will not deteriorate nor destroy; occupation that will render sickness tolerable, solitude pleasant, age venerable, life more dignified and useful, and death less terrible.

SUGGESTIONS TO ASSISTANT TEACHERS.

THE education of children in masses is a business; it should be conducted on business principles; and those engaged in teaching must conform to these principles, if they hope for success.

There is nothing more essential to success in business than punctuality. A laborer who is habitually late is not tolerated, and the clerk who is frequently absent from duty soon finds his place permanently filled. Every one admits the justice and the necessity of this. Punctuality is equally necessary in teaching; yet the records of many large schools show an irregularity upon the parts of the assistants, which, if allowed in any other business, would ruin it. We know that some absences are unavoidable. These should be excused; but our point is this—that teachers allow themselves to be absent for reasons which in any other business would not be thought sufficient.

Closely connected with this subject is promptness in the discharge of school duties. Teachers sometimes allow the arithmetic to run upon the reading; the reading to crowd the geography; and the geography to completely oust the spelling. With what feelings would a merchant regard his clerk who repeatedly failed to do the proper thing at the proper time? A principal soon loses all hope of making a good teacher of one whose ideas of order are in a chronic state of confusion; and no teacher who lacks punctuality and promptness must expect to give satisfaction, or to make progress in the profession.

Again, of two business men, he who strives to learn every thing connected with his pursuit, to make himself acquainted with the practices of others in the same occupation, will succeed better than he who only performs, no matter how conscientiously, his daily routine. One becomes an originator as well as an executor; the other, a necessary wheel in the machine, which can be duplicated.

The assistant who would rise in his position must not be content with the knowledge he possesses when he enters. On the contrary, while his days are given to the art, his nights must be given to the theory of teaching. He who, having once received a certificate, considers himself at liberty to rest, and thinks all further requirements to study, in his case, an imposition, will certainly find the better places in the profession filled by those who started with him, perhaps, yet did not deem their diploma a reservoir of knowledge, or a fountain of inspiration in the art of teaching. As well-directed effort is a sure passport to success in business, so it is equally certain to win advancement in the teacher's profession. The assistant, therefore, should lose no opportunity to add to his stock of knowledge, especially such as will lead him to a better acquaintance with the human mind, and the laws which govern its workings.

A business man who takes a situation until something better offers, usually puts only enough energy into the pursuit to prevent a complete failure. He expects no great reward, and is seldom disappointed. In business, only life-pursuits are successful, and those temporary ones which are pursued with equal energy. Now, most male assistants regard teaching as the stepping-stone to some other profession; and most female assistants look upon it as a respectable manner of passing the few months or years which intervene between the time of their leaving school and the period when they shall enter upon their predestined lot. The first class expect to study as much in preparation for their life-work as they would if not engaged in teaching; and the second class hope to attend just as many balls and parties as the veriest "highflyer at fashion." When the first should give his attention to the "mess" which Peter Jones is making of his geometry recitation, his thoughts are busy with his favorite author; and when the second should see the spider-tracks which Peter's sister is scrawling in her copy-book, she is thinking what she will wear at night to the party, or how she shall dress her hair. At recesses, and all odd minutes, the one pulls out the book which he reluctantly closed to enter upon his daily task, while the other rushes to her mates, to tell her adventures of the previous evening, or to hear a similar narration from others. Success cannot attend such teachers, and school-officers, who are usually business men, are not slow to perceive it. To all such teachers, just this: first your school, then your pleasure. Allow your superiors to complain of no neglected duty; and then, as much of pleasure as your time and conscience will permit.

In business, the success of the firm is dear to every faithful employee, and the disasters to "our house" are as keenly felt by the clerks as by the head. Assistants should feel a like interest in the success of the school. A principal, whose efficiency is undoubted, cannot have a good school unless thoroughly and honestly seconded by his assistants. Such a principal is not likely to have much esteem for those who carry out his suggestions mechanically, and with so little heart, that failure is almost certain. There is no better or fairer way to remove an inefficient principal than for his assistants to prove themselves, by their works, to be his superiors. But the success of principals and assistants is mutual.

It seems to us, therefore, that those assistants who are punctual at school, prompt in discharging their school duties, eager to perfect themselves in the principles and detail of their profession, zealous in the discharge of their daily duties, anxious for the success of the school, and indifferent to none of its affairs, cannot fail to win the approbation of their principal and to rise in their profession; while those who pursue the opposite course must look for opposite results. It is in accordance with inexorable business laws, and it is time that these should be more fully applied to the management of schools.

ISOMETRIC DRAWING.

LESSON III.

Sections of the Cube.

OUR practice in this lesson will be in drawing cubes that have been cut by planes parallel to the sides.

The rulers are to be employed precisely as in the last lesson, and a complete cube, like Fig. 13, is to be drawn as the first step in each diagram.

The letters AEFHIKL will be found in the same positions, whenever they are used about the cube, as in Fig. 5 and Fig. 13; so that AE will always be the lower left-hand, and AK the lower right-hand line of the cube, and so on for the remaining letters. By this plan you will soon get accustomed to their positions, and will more easily understand the references to the figures.

I advise you to draw each of the diagrams of this lesson first upon paper, and to make each cube exactly one inch on each side; then, if you choose, draw them upon the blackboard at least four times as large.

The drawing should be made first upon paper, in order to acquire the right use of the triangles. We will adopt the inch scale, because the quarters and eighths are so common upon the *rules* in general use.

The figures accompanying this lesson were made smaller in order to get the required number upon one page.

Now, to draw Fig. 14, make a complete cube like Fig. 5; find, by measuring, the middle point M of the line LF; now place your triangles in proper position, and draw from M a line parallel to AK or LI; it will come to N, the middle point of HI.

From M draw a vertical line downwards one-fourth of an inch; from this point T, draw a line to the left parallel to AE—this will be TV; from V draw VW parallel to AK, and one inch in length; finally, draw a line from W parallel to AE, till it meets the line NM.

The lines NH, HF, FM, and FV may be erased.

Now draw Fig. 15, which is a cube cut just as deeply as Fig. 14, but on one of the nearer edges, so that it is like Fig. 14 turned half way around. I need not direct you how to draw the separate lines, but you will notice that it requires two more lines than Fig. 14.

Unless you are careful, you will forget to draw the line TX.

Fig. 16 is a cube cut at two lower edges; the pieces taken out are of the same size as those cut from the two figures preceding. It requires just as many lines as Fig. 15.

For Fig. 17 draw again a complete cube, and measure a quarter of an inch from each end of the lines FH and LI; this will give the points T, V, W, and X. Now draw a line from W to T; also from X to V. From T and V draw vertical lines downward, each three quarters of an

Fig. 14

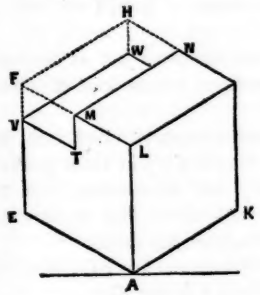


Fig 15

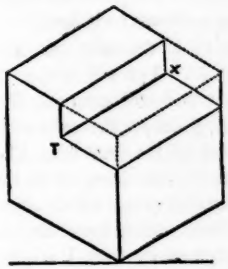


Fig. 16

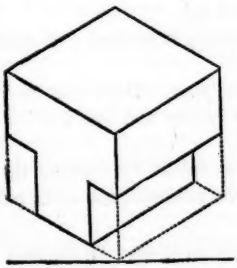


Fig. 17

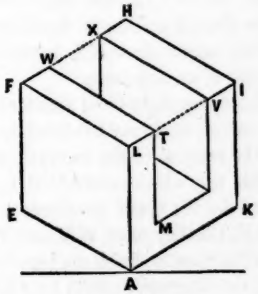


Fig. 18

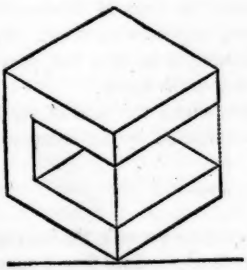
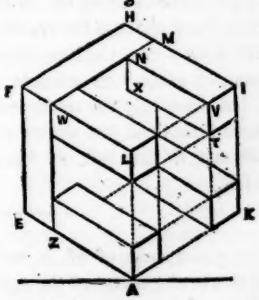


Fig 19



inch; the extremities of these lines are the points M and N; draw MN, which will be parallel to AK. From N draw a line parallel to AE till it meets MT, and from X draw a vertical line till it meets WT, and the figure will be complete.

As Fig. 18 requires exactly the same number of lines, I will omit any further reference to it here.

Fig. 19 is the cube cut through in two directions just as deep as in 17 and 18. You will notice that it represents a rude kind of table or bench turned over upon one side.

Having drawn the cube as before, measure a quarter of an inch from each end of the four lines AL, LI, IK, and KA; join these points of division by faint lines, as in the diagram; their intersections form four little parallelograms which represent the ends of the legs or standards. Draw these ends heavier than the rest of the lines just drawn.

Next, measure from F a quarter of an inch on the line FL; from this point, W, draw lines WM and WZ parallel to FH and FE.

Now draw from V a line parallel to IH to meet WM, and from T another line, TX, in the same direction, three quarters of an inch long. Draw from N to X; it should be a vertical line.

You might draw NX before TX by making it vertical, and exactly a quarter of an inch long.

The upper right-hand standard is now complete. Draw next the opposite one at the lower left-hand corner; the number and length of the lines are the same as in the one just drawn.

This leg, whose corner is at L, is easily completed by drawing the two lines from the upper and lower corners of the parallelogram at L, parallel to AE, till they meet WM and WZ.

In like manner, finish the leg whose corner is K, by drawing the three lines as in the diagram, parallel to AE, to meet the corners of the opposite leg.

Two short lines remain yet to be drawn; they represent the edge of the top part of the table on the two further sides.

Place your triangle for drawing a vertical line from M downwards, but do not draw across the legs already drawn, only between them. In similar manner place your triangle when drawing from Z a line parallel to AK, but draw only the small portion shown in the figure.

These little lines just drawn would show where the lines of the leg K should end, if they had not been also terminated by the corners of the leg at L.

THE grand error of life is, we look too far—we scale the heavens, we dig down to the center of the earth for systems—and we forget ourselves. Truth lies before us; it is in the highway path, and the plowhman treads on it with clouted shoes.—*Sterne.*

AN EX-SCHOOLMASTER IN CHINA.

A TRIP TO THE GREAT WALL AND JE-HO.

HAVING no day of rest corresponding to the Christian Sabbath, the Chinese make the few festivals, which relieve the monotony of their continued round of toil, the occasion of great rejoicing and an entire cessation from labor.

The most important of these festivals is that of the New Year, which occurs sometimes in January and sometimes in February, of the Western calendar. For the first three days of the year the shops and other places of business are closed; and by some the observance is continued for a much longer period. Our teachers take a vacation of fifteen days at this time, and we determined to improve the opportunity by a visit to the *great wall* and *Je-ho*—generally spelled *Jehol* or *Zhehol*. The pass of Ku-pei-kou, or "the old North Pass," is nearly eighty miles northeast of Peking; and Je-ho, "Hot Stream," is about fifty miles beyond the pass, in nearly the same direction. The wall is seen at great advantage at Ku-pei-kou, and Je-ho is interesting from containing the imperial summer residence and hunting-park, besides several magnificent temples of the Lamas, the principal one being the celebrated Pootala.

The Chinese New Year occurred this year on the 15th of February, the vacation commencing five days earlier. We left Pekin at noon on the twelfth, a mild and beautiful day, and were favored with similar weather during the entire trip, with the exception of the last day. Shortly before passing out of the city gate we met the embassy from Corea, just arrived to pay their annual tribute to the emperor. The roads from Peking were exceedingly dusty. The soil is a light sandy loam, cultivated with the care and diligence characteristic of the Chinese. Small villages of neatly built mud-houses occur at frequent intervals. On the road we met numerous carts laden with grain and other articles for the use of the capital. These carts were drawn by the most nondescript teams, composed of mules, ponies, donkeys, and oxen—the large grain-bearing carts being drawn generally by six, seven, or eight of these animals indiscriminately harnessed in lines two or three abreast. To the west, in a line parallel with the road, and from five to ten miles distant, lies a range of mountains, barren and rugged, but softened in appearance by the distance. Along the road numerous small groves of a species of willow pleasantly relieve the level monotony of the plain, and form almost the only exception to the general absence of trees in Northern China. No forests are seen in any direction to form a prominent feature of the landscape—the improvident inhabitants having long since exhausted the original growth, and failed to provide for its renewal.

We spent the first night at Santien, the *Three Taverns*, a small village

about twenty miles from Peking. A Chinese inn bears a sorry comparison to a tavern at home. You enter through a covered gateway to a large courtyard, on each side of which are open sheds for the animals, and at the back a row of rooms. The central room, elevated a little and better than the rest, is generally occupied by the better class of travellers. A brick couch, called a *kang*, which answers the double purpose of chair and bed, is always built across one end of the room. At night a fire is built beneath the bed, rendering it quite comfortable. The scarcity of fuel forbids the use of fire for any other purpose except cooking.

One or two small tables, with occasionally a chair, constitute the sole furniture of the room. Our two servants prepared dinner for us, and we slept very soundly on the hard bricks with such skin rugs and blankets as we had brought with us for bedding. Our custom was to start at about 7 A.M., stop at an inn at eleven o'clock for breakfast, and then ride until six at night. Inns occur at brief intervals. A very large number of them are kept by Mohammedans—a noticeable circumstance, showing the prevalence of that religion in Northern China.

On the afternoon of the second day we passed the large-walled town of Mi-yün-hien, and halted for the night about six miles beyond. At Mi-yün the mountains first appear on the east, and thence to the wall the road runs through a valley of variable width, crossing several spurs of the mountains through deep passes. The next day, the 12th, soon after noon, we passed another walled town, Shïh-hia. The walls of both these cities were quite dilapidated. A short distance beyond the latter I obtained, with the aid of a glass, my first view of the *Great Wall.* It was distinguishable by its towers, scaling a range of high mountains, and presented a grand and imposing appearance.

As you approach the wall the road becomes more rugged and difficult, and for several miles follows a mountain stream through a narrow pass, at the summit of which stands the Man-tien mên, "Gate of the Southern Heavens." From this point a magnificent view of the wall and an intervening valley is obtained. As far as the eye can reach toward the west and toward the east, the wall can be seen following the crest of the mountain range, the square outlines of the towers standing out against the clear sky. Here we met a train of camels laden with articles for Peking, and driven by fat, jolly, dirty-faced Monguls, who greeted us with their customary salutations of "Mundee." Crossing the valley we soon reached the first gate, there being in all five at Ku-pei-kou, through as many different branches of the wall. The town is situated within the inclosure made by these branches, which appear to have been built to strengthen the position—this being one of the principal channels of communication between the regions on either side of the wall. A small river runs through the pass. The wall, viewed from the valley in which the town lies, presents a noble prospect, the different branches, crowning the mountain ridges and

stretching away until lost in the distance, made an impression upon me which I shall never forget. For over two thousand years this wall has stood the force of the elements, and now remains, though in a ruined condition, the most stupendous monument of human power and folly in the world. The amount of labor expended in its erection is almost incredible.

In the pass at one of the gates I noticed a novel way of getting a heavily-laden cart down a steep hill. Three or four mules were tied by ropes around their necks to the hinder part of the cart, and then the animals drawing the cart were started on. The mules, true to their nature, on perceiving themselves drawn forward, pulled back with all their might, and thus prevented the cart from rolling too rapidly down the hill. On arriving at our inn we proceeded as usual to occupy the best room. An interesting scene, and one quite illustrative of Chinese character, at once occurred. The innkeeper came into the room with a haughty air, and demanded just five times the customary price. On being remonstrated with, he exclaimed, "These outer barbarians do not understand—." He did not have time to say more before he was made aware that the present "barbarians" did understand at least enough not to be swindled as foreigners generally are by the Chinese. In the evening our kang, not being sufficiently warm, we called for more fuel. The innkeeper protested that there was no more to be had; but a quiet suggestion that the chairs and tables in the room would answer the purpose admirably, brought such a supply of fuel that we were well-nigh baked before morning. Nothing succeeds so well with these Chinamen as the display of a little determination and energy. The petty tricks and devices to which they resort to impose upon strangers are beyond conception.

We spent a day at Ku-pei-kou, and climbed the hills on both sides of the valley to examine the wall. In many places it is much broken down, the parapet and upper part of the wall having fallen to pieces; but the general form is well preserved. The foundations are of large blocks of granite or conglomerate, regularly and solidly laid. The bricks which form the sides of the superstructure are firmly bedded in hard white mortar. The great strength of the work, when new, may be judged from the fact that I labored nearly half an hour with hammer and chisel to free a brick, the most easily obtainable of any that I could find. This brick, which I brought away, measures seventeen inches in length, eight in width, and four in thickness, and weighs forty pounds.

At one of the imperial travelling palaces situated in a pleasant grove about twelve miles beyond Ku-pei-kou we obtained another fine view of the wall, the sharp outline of the towers being distinctly discernible against the clear blue sky.

The character of the country now becomes more rugged, the road running through a narrow valley between mountain ranges whose rocky sides were barely covered in places by a scanty vegetation. Occasionally small

groves of oak and pine occur, but the general appearance of the country is that of barrenness and solitude. The inhabitants, scattered in hamlets along the road, eke out a scanty subsistence by cultivating the little patches of land in the narrow valleys. Several flocks of small black goats were seen browsing on the steep hillsides. In a narrow and precipitous gorge, on the left of the road, a beautiful frozen waterfall of the purest whiteness glistened in the sunlight. A short distance beyond we arrived at the first of the *San-tao-ling*, "The Three Passes," which must be crossed before reaching Je-ho. These passes are quite long, and so steep that we were thoroughly tired before reaching the summit, while the mules had great difficulty in dragging the empty carts up the ascent. Two of these passes are cut through the solid rock at great expense of labor, and in the last a slab bears record that the pass was completed by the Emperor *Kanghi* in the year 1717. A pair of singular rocky towers stand on the right. They rise to a great height, and are much smaller at the base than near the summit. One of a similar form, situated on a flat mountain top near Je-ho, bears a striking resemblance to the funnel of a locomotive.

On the afternoon of the next day after leaving Ku-pei-kou, we arrived at Je-ho, the furthest point in this direction, I believe, hitherto reached by foreigners. At the entrance of this place we were greeted with the sight of seven or eight human heads hung in cages on a pole in a conspicuous position, as a warning to robbers, such having been the former owners of the hideous blackened skulls thus exposed.

It being New Year's day, the people were out paying their calls, arrayed in their best garments, or in garments hired for the occasion, and wishing each other Happy New Year, or "New Joy," as they express it. We spent a day at Je-ho, visiting objects of interest. Near by, the imperial park, ten or twelve miles in circumference, lies on a hill which rises in the centre of a circular valley surrounded by mountains. The town is situated on the southern side of the valley, and the temples previously mentioned, on the northern slope. The scenery of the whole valley is exceedingly fine. Admission to the park was not allowed, every thing imperial being forbidden ground. An elegant nine-storied pagoda rises near the eastern wall, and numerous pavilions and palaces grace the romantic groves and lawns within. By a little management we gained admission to the principal temples. The great Pootala is well worth a journey to see. The buildings are of Thibetan architecture, and present a striking contrast to the fanciful structures of the Chinese. The main edifice is nearly square, and about a hundred and fifty feet in height. Its exterior is plain, but very imposing in its simple grandeur. Behind the temple rises a hill from which a fine view of the valley is obtained. Within the spacious grounds surrounding the temple are numerous smaller buildings of the same style of architecture, and a handsome open Chinese pavilion covering a lofty slab, on which is inscribed in Chinese, Manchu, Mongul, and Thibetan, the

date of its erection (1772) by the Emperor *Kienlung*. A little to the east of the great temple stands another of the same style and of nearly the same size. Still further east is the *Temple of the Great Buddha*, so called from a colossal gilt statue of that deity, upwards of forty feet in height. In all these temples numbers of Lama priests, indolent and dirty, were idling away their time.

We left Je-ho early on the morning of the 17th; passed Ku-pei-kou on the afternoon of the 18th with no incident of note except the sight of a Chinaman washing his face, whereupon we at once set him down as crazy, it being the first instance of the kind we had seen during the winter. A few miles further on we met a train of a hundred camels returning from Peking laden with native cotton cloth. The night of the 19th we spent at Hwai-jou-hien, in the worst and dirtiest rooms we had seen during the trip. On offering the inkeeper, an uncivil, churlish fellow, only twice the proper price instead of three times that amount, as we had been accustomed to pay, he insolently refused to receive the money, demanding eightfold for his wretched quarters. Our carts were ready to start. Throwing the proffered cash upon the ground, he said he would not open the gate until we had acceded to his demand. He was instantly seized, marched to the gate, and ordered to open it forthwith. Two of his servants, seeing their master in the hands of the horrible barbarians, and fearing lest he should be devoured at once, rushed to the gate and opened it with all possible speed. We left the surly fellow storming at his bad success.

The next day we rode westerly along the base of the mountains to the Ming tombs. As we were now off the regular highway, no inns were to be found. At a little village we breakfasted on "ping," made of flour, water, and oil, seasoned with a little salt and much dirt.

During the greater part of the day we rode through orchards which supply the markets of Peking. Apple, pear, peach, and persimmon trees, were in endless profusion, and in spring and autumn must present a beautiful appearance. I had lived six months in Peking without seeing a single fruit-tree, and had often wondered whence came the vast quantities of fruit seen in the city. But the immense orchards we now saw fully accounted for the supply.

In the afternoon a dust-storm arose, hiding all landmarks. We lost our way, and crossed a terribly rough country for several miles. At dusk we arrived at the "Tombs." These are the tombs of the emperors of the Ming dynasty, who ruled China from A. D. 1368 to 1644. They are among the most interesting objects in the vicinity of Peking. As we made but a hasty survey of them, and intend to visit them again during the summer, I will defer a description until some future occasion.

The next day we returned to Peking, having made a trip of eleven days of great enjoyment and interest.

GEOGRAPHY.

THERE is among the live instructors of the land no feeling more common than that of dissatisfaction with the ordinary methods and means of teaching geography. As it is taught at present in most of our schools, too much time is occupied and too little accomplished; too much recited, and too little remembered. By right methods of instruction, a much better knowledge of geography might be acquired in one-fourth of the time that is now spent upon this study.

We hope to be able to point out some of the mistakes to be avoided, and to suggest a few improvements, by means of which the time spent upon this important subject may yield to the pupil a better reward.

Maps.—The first great reform should be to erase nine-tenths of the matter from our maps. The difficulty of finding a needle in a haystack is almost equalled by that of pupils in finding upon ordinary maps what they are required to learn. Why should maps of reference be made maps of study? Why cannot the wheat be furnished without the chaff? Let our maps contain only what can be readily remembered, and geography will become a pleasant study.

But this is not the only fault of our maps. They not only contain too much unimportant matter, but they represent too little of that which is highly important. While they give us too much in quantity, they give us too little in quality. They should be as perfect representations of the earth's surface as possible. They should contain as many facts as can be examined without confusion. And their value must be in proportion to the truthfulness and completeness of this representation. So if, in addition to showing the contour and locality of geographical divisions, a map can, with equal clearness, be made to represent the physical relief of the land masses, the populations of cities, and the heights of pleateaus, mountain ranges, and mountain peaks, the picture is made so much the more complete and valuable.

The Use of Maps.—A man's knowledge of geography depends upon the clearness and distinctness of his mental pictures of the earth's surface. It is vain to make the maps of our school-books more perfect and complete, if the pupils studying them do not, by right methods of instruction, gain correspondingly clear and distinct mental impressions of those maps. It is folly to furnish our schools with finely executed and costly copperplate and lithographic maps, while the mental pictures the children acquire are but as the poorest wood-cuts.

Much is said about clothing a map with the life and beauty of the country it represents. This is well. The live teacher will omit no opportunity of withdrawing the minds of his class from the representation to the realities. But it must be remembered that nothing tends so directly and

effectually to make real the thing represented as a distinct and definite idea of the representation itself. Let the teacher be sure that good photographic pictures of the earth's surface are made upon the minds of his pupils, and then he is ready to talk to them of the wonders of boiling springs, of burning mountains, of buried cities, of rivers of moving ice, of dark caves, and mighty cataracts. Then he can scale with them the mountain sides, or sail down noted rivers, or visit renowned cities. Then the study of the character and habits of different nations, a survey of the characteristic vegetation of different zones and of the peculiarities of the animals of different continents, will become pleasant and profitable.

In teaching geography there are two extremes, both of which must be avoided. The teaching may degenerate into mere map-teaching, or it may fall into the other extreme of becoming purely descriptive. The *names* of mountains, valleys, oceans, cities, rivers, etc., must be taught, and a picture giving their relative locations must be studied; but these names should be so joined with the realities as to create in the minds of the children a lively and pleasant interest. By a judicious course of instruction between these two extremes, the right kind of maps will become, as they should, true and interesting interpreters of nature.

IS COLLEGE EDUCATION DECLINING?*

THE President of Columbia College, New York, in a recent paper of great research and statistical value, has avowed his conviction that college education, as such, is greatly on the decline in the United States; so that whereas one in forty-one used to take a college course, now not above one in sixty does so. Perhaps hardly any more competent or considerate educator of youth could write on this subject. He is himself a graduate of Yale, a teacher nearly all his life, distinguished as a professor both in the North and in the South, and in several distinct professorships, especially the higher walks of mathematical and astronomical science, chemistry, and mineralogy. Is it so, then, that the proportion of college students is declining? And, if so, what does it indicate? A decline in the love of high scholarship, or simply the conviction that there are other and better ways of practically securing the best education? There are many things that appear to favor different conclusions from those of President Barnard. Thus, where do we find a single college once well established that has had to be shut up for want of students, or even from a diminished number? Yet new colleges are continually being established all over the land, and are raising both their price of tuition and standard

* Philadelphia *Public Ledger*.

of scholarship. Never, perhaps, in the history of the country have such large and additional endowments been secured for these institutions as within the last five years.

Many of our colleges seemed to be threatened with decay by the late war, but they generally appear to exceed all former prosperity now that peace has been restored. In hard times the number of students diminishes, while in flush times, like the present, students flock largely to college. All these things must be taken into the account. That the number of graduates is increasing absolutely would seem to be certain ; but whether in proportion to our population, the statistics of Dr. Barnard will be most valuable aids in determining.

Supposing, however, that the number of college graduates is declining relatively to population, what is the cause? In part it is the higher standard of education required for beginning on such a course. At Princeton, Harvard, and Yale, the amount of classical preparation to enter is practically far higher than used to be necessary to graduation—higher than is really necessary now for graduation in many of our younger colleges. Dr. Hedge gave an accurate description of all this a few weeks ago, as far as it pertained to Cambridge. He showed that in its early history, though nothing but Latin was to be spoken within the walls, yet nothing beyond a little of Cicero and Virgil were allowed to be studied, and in Greek the New Testament alone ; while the arrangement of the different heads of sermons in common-place books was the chief training of the student mentally. Such was college education in New England at first. Even in the last twenty years the requirements for entering are so much more strict in all the older colleges, that this sort of life is getting to be quite a different thing. Aaron Burr entered the Sophomore class, at Princeton, at thirteen, and graduated at sixteen. Now the average age for entering Harvard and Yale is seventeen and a half. A college course education, therefore, has gradually become somewhat revolutionized, though called by the same name. It is intended now for young men from eighteen to twenty-two, instead of for youths from fourteen to eighteen. The standard of education is not only rising for youths of the same age, but the average age through which it is carried on is rising also. So far has this been extended, that Harvard now proposes to begin with the present Sophomore standard, and from that point throw away all further compulsory study of the classics or mathematics, and allow instead a four years' course of optional studies—a university instead of a college course. Whatever, then, may be coming to college courses, the demand for education of the highest character is rising amongst us, and all colleges feel the influence of that movement. Equal to what used to be the best college education, is becoming in many different ways attainable all over our land more readily than ever, and by those who seek it from the plow, the loom, or the anvil.

The chief real question, then, is this: How far should a system of *general* education be carried, before a *specific direction* be given to it connected with the future profession of the young man? If he is going to be a lawyer, a divine, a medical man, or a scientific farmer, or an educated mercantile man, or dealer in stocks and exchange, how far should all these have a common education in the same text-books, and where should each branch off on his own specific road? At West Point for the army, and the Naval School for the navy, the separation begins at about the point where a youth would be considered well prepared to *enter* college. Yet, as a general rule, the broader the base of general principles—that is, of common or universal education—the higher the superstructure of a specific education can afterwards be profitably carried.

PLANTING-TIME IN GOSSIPBOROUGH.

CHARACTERS:

FARMER THRIFTY.
FARMER THRIFTY'S WIFE.
FARMER THRIFTY'S SON HARRY, (*home from college.*)
MISS LOQUACITY, (*the news-peddler.*)

SCENE—*Kitchen.* TIME—*Afternoon of a rainy day in May.*

(*Right*) FARMER T., *sitting on a low chair, shelling corn.*
(*Center*) MRS. T., *in bordered cap standing at table, ironing.*
(*Left*) HARRY T., *in study-gown and slippers, lounging upon a sofa, reading.*

Mrs. T. I do say for it, Hezekiah, I shall be thankful when you get done making so much muss. When 'll you be done planting?

Farmer T. Oh, dear! I don't know. If we have much more of this wet weather, the corn's just as well off in the corn-house. It'll all rot if planted. We'll put it in as soon as this spell's over [*with a side glance towards* HARRY]. Harry likes well enough to spend the money; perhaps he'll lend a hand for a day or two, just to help us through.

Harry. I have been expecting that honor ever since my return from college. For such delightful service I shall need a uniform consisting of a broad-brimmed hat, a hack-about, scare-crow suit, a pair of gloves, and big boots—[*aside*] conditions hard to comply with, I reckon.

Mrs. T. My son, perhaps you'll find what will suit you in the attic. [*Tests the heat of her iron with finger moistened by the lips*].

Harry [*with a disconsolate look*]. All right, mother. There's nothing like being ready for an emergency. The weather may be fine to-morrow. I'll try my luck on an attic expedition. [*Exit.*]

Farmer T. I don't want you to get any more potatoes out of the big bin. There won't be enough left to plant.

Mrs. T. Well now, I do say, there it is again. You men never think

women's time good for any thing but to waste. Do you want me to blister my fingers on those little bits of potatoes in that small bin? Well, I sha'n't do it. So, there. [FARMER T. *shells violently.*] The small potatoes are just as good as any to plant. You allers cut up the big ones. What's the use? [*Irons away vigorously.*]

[*Enter* MISS LOQUACITY, *without warning. Talks very fast.*

Miss L. Lah suz! good morning. How do you do? Hard at it, I see. I came right in without knocking. Don't disturb yourself at all. I'll wait on myself. [*Helps herself to a seat.*] I feel kind o' at home here. What's the sense o' going into a neighbor's house to be waited on? I try to feel perfectly at home wherever I go.

Farmer T. [*aside.*] That's the bother of it.

Miss L. Bless my heart, Lucy Ann, you don't know how I've wanted to see you all this week, and now its Wednesday; but you know it's been so awful wet. I sot out as soon as it held up. Lah me! do you know I fell in love with your new bonnet, last Sunday?

Farmer T. What if some luckless fellow had treated *you* in that way, Miss Loquacity?

Miss L. Me! Why, how?

Farmer T. As you did the bonnet.

Miss L. Well now, Uncle Hezekiah, you are too bad. There's no fear of that.

Farmer T. Uncle! Ugh! Uncle!

Miss L. Lah suz, I call that bonnet lovely. I said as much to Mrs. Stimpson, and, upon my word, what do you think she said. Just as sure's I set here, she said it was ugly's Cain. I don't care what the Stimpson's think, I mean to have one just like it. Did Miss Jenkins make it?

Mrs. T. No; I got it of Mrs. Millen.

Miss L. They say Mrs. Millen is going to be married to old Sniffins.

Mrs. T. I can't believe it.

Miss L. Nor I; but they say it's so. Lah suz me! there's lots o' folks going to be married. The school ma'am is going to marry Seth Jones; and Susan Jones is going to marry their hired man. Isn't that awful? Did you ever think Jennie Smith, who's been away to boarding-school, would take up with John Peters? They say that's coming off soon. And there's a stranger from out of town visiting Anne Stimpson. Anne and brother Sam have allers been pretty thick. I'm 'fraid something's wrong. Don't you think Mr. Larkins, whose wife died only last March, goes to see that young Miss Atkins! At least, I saw him going that way. Who do you suppose is going to take Fannie Lucas. She's been getting, I don't know how many, new dresses, and has had a dress-maker at the house a whole week—

[*Enter* HARRY, *in his attic uniform.*]

Bless my soul and body! [*Stares at him.*] Upon my word, Harry Thrifty, is this you! Have you just come from college?

Harry. Oh, no. I have been home several days.

Miss L. Hadn't hearn of it. Lor' bless me! what's this you got on?

Harry. This is the latest college style, Miss Loquacity. This coat has seen the first circles. But it has been badly used. It was, unfortunately, obliged to lie in the ditch overnight not long since, and—

Miss L. Now, that beats all natur. That the kind of clothes they wear at college! I do say for it!

Harry. Why, Miss Loquacity, that hat has covered more brains than some whole families possess. [*Picks up the corn scattered on the floor.*]

Miss L. My stars! is it possible! I do think this is a strange world.—But there goes Parson Loveland; I must ask him where the prayer-meeting is to be this week. Good-day, all. [*Exit.*]

Mrs. T. Why, Harry! I am astonished! You know what a dreadful tongue she has.

Harry. Yes; everybody knows that. But she might as well talk about college styles as any thing.

Miss L. [*Running in.*] Do come here! Come quick. [*All go to the door,* MISS L. *going out last.*] Do see that rainbow!

SHOOTING STARS.—The most imposing flight of meteors on record, occurred on the 13th of November, 1833. Astronomers tell us that a similar display may be expected on the same or following day of the current month. Only thirteen of these meteoric showers are recorded between the years 903 and 1833. That of the latter year extended over the entire breadth of North America, and from the Great Lakes to the West Indies. Arago computes that not less than two hundred and forty thousand meteors were visible that morning above the horizon of Boston. In many parts of the country the common people were terror-struck, imagining that the end of the world was come. Those whose education and vigor of mind kept them from such terrors were nevertheless reminded of the grand description in the Apocalypse: "The stars of heaven fell unto the earth, even as the fig-tree casteth her untimely figs when she is shaken of a mighty wind."

It is thought that the expected display will be the last of the kind during the present century.

AMERICAN EDUCATIONAL MONTHLY.

NOVEMBER, 1866.

Defects in Our American Colleges.

THE recent University Convocation assembled at Albany by the Board of Regents of the University of the State of New York, and the exercises at the commencements of the hundred and odd colleges and universities during the past summer, have led us to a somewhat serious consideration of the defects in our collegiate institutions.

One of the most prominent of these is *the want of a high and uniform standard of examination for admission.* A few of our older and better colleges do exact a pretty thorough preliminary training, and reject all who do not come up to the standard; but these comprise only institutions which, from their ample endowments and facilities of instruction, are sure of full classes under any circumstances. The younger and weaker colleges, even in the Eastern and Middle States, not only adopt a lower scale of requirements, but do not even exact a compliance with these, and admit young men to the Freshman class, who are sadly deficient, not only in the prescribed classical and mathematical attainments, but in the more indispensable studies of an ordinary English education.

A second defect in collegiate management is *a want of thoroughness in instruction.* The classical and mathematical instruction at Yale is certainly as thorough and critical as that of any college in the United States; yet how few, even of the students who take the honors, can a year after graduation write a Latin or Greek oration which shall make any approach to classic accuracy and elegance, to say nothing of efforts in Latin or Greek poetry! And if this is true of Yale, how much more is it true of the hundred colleges which have never made an approach to the high standard of scholarship of that venerable institution!

The *order and progression of studies is badly arranged.* We do not object, as some do, to the confining of the greater part of the linguistic studies of the course mainly to the first two years, for we are satisfied that languages are acquired with greater facility by the young than by those who are older; but it is manifestly wrong to put upon the new student,

who has not acquired the habit of studious application, a severer task than is required in the junior and senior years. Yet there are few colleges in which the studies of the Freshman and Sophomore years are not more difficult and engrossing than those of the junior and senior years. If the college curriculum must be limited to four years, and it would be difficult to add another year, then some of the least important studies should be dropped, and the senior year should be utilized more fully than it now is. In most of our colleges the senior year, the very time that the mental muscles are most firm and vigorous and the mental grasp most certain and comprehensive, the student has comparatively little to do. In some colleges, even a majority of the senior class are absent the greater part of the year, teaching or studying a profession; yet they receive their degrees just as if they had been in constant attendance, the real examination for graduation being at the close of the junior year. If we are to have a four years' course, the senior year should be the hardest working year of the four; and it might well be that the study of physical as well as of metaphysical science, especially in the higher and more practical relations of the former, should be deferred to that year. This would be a great advantage to students who intend prosecuting a further scientific course, as well as to those who look forward to teaching, or to the medical profession; and it would not come amiss in the other learned professions.

The desire to graduate a large class leads many of our colleges *to be lax in their annual examinations and their examinations for graduation.* Very few of our colleges remand the delinquent and incompetent scholars of each class to the ranks of the class below. The greater part go through the farce of passing those who have failed utterly, *speciali gratia*, making a pretence of requiring them to make up during vacation for their deficiencies. This is but a pretence, and the result is that almost every college graduates annually from three to a dozen blockheads,—young men who have managed to get through college, without acquiring even the rudiments of an education. How much better is even such severity as is practiced at West Point, where the class which entered a hundred strong seldom graduates more than from thirty to forty!

Another fault in our colleges, and the last one we shall now particularize, is, *their perfect recklessness in conferring honorary degrees.* The honorary degree of *Master of Arts*, which formerly possessed some value, but now from its cheapness is really worthless, is conferred in hundreds of instances on men who only possess the single *art* of fawning on some trustee, fellow, or member of the faculty. A skilful mechanic, who has

made a successful machine, is dubbed M.A., when the only *art* he possesses or is master of, is that of invention. Or some man who possesses a natural gift for mathematics, and who on almost every other subject is nearly an idiot, is authorized to add M.A. to his name. Amid these many misapplications, there is, indeed, now and then an instance where a man, partially or wholly self-taught, has struggled up to a grade of attainment in literature, science, or art, or all combined, which makes him fully the peer of the best graduates of the college which reflects honor upon itself in conferring the title upon one so deserving. But these are the few and rare exceptions, and do not cover one tithe of the cases where this honorary degree is conferred.

If the Master's degree is so often misapplied, and its announcement so often brings reproach upon the colleges, how much worse is the misapplication of the higher degrees of D.D. and LL.D. The "semi-lunar fardels," as Dr. Cox used to call them, descend now upon the shoulders of men who are not learned in divinity or qualified to teach that or any thing else. Of the two hundred and fifty, more or less, doctors of divinity, ground out annually, some of them by female colleges, and some by colleges which seem to maintain a precarious existence merely for the purpose of conferring honorary degrees, it is safe to say that fully one-half are unworthily bestowed. In Europe, except in the Scottish universities, which are somewhat lax in this respect, the title of D.D. means something; it is either received *in course*, as in the Continental universities, after a long course of theological study and a severe examination; or if bestowed *causa honorariis*, it recognizes the man on whom it is conferred as eminent for scholarship, and especially for biblical or theological learning. How is it here? How many of our D.D.'s know little Latin and less Greek? How many are innocent of any knowledge of either, or of any other language except their own? How many lack a decent acquaintance with English grammar or composition? The conferring of a high degree so unworthily is a disgrace to a college. It degrades it in the eyes of the community, and weakens its moral power.

The abuse of the degree of *Doctor of Laws* has been equally gross and disgraceful. The fashion of conferring this degree upon every President of the United States, and every governor of a State, or prominent general in the army, is one more honored in the breach than in the observance. Abraham Lincoln was an admirable President; but was he so profoundly versed in the civil and ecclesiastical laws of his own country and Europe as to be entitled to the degree of *Legis Legum Doctor?* Has

Andrew Johnson any better claim to it? Does Parson Brownlow come up to our ideal of a Doctor of Laws? Generals Grant and Hancock and Admiral Farragut are worthy and excellent commanders, entitled to the highest honors in their particular departments of the public service; but we think either of them would prefer to go into as hot an action as they ever fought, rather than attempt to expound either ecclesiastical or civil law.

But the perversions of this title do not stop here. Within a dozen years it has been bestowed on scores if not hundreds of persons whose attainments gave them not the slightest claim to it. Manufacturers of elementary school-books, some of them, men who had taken up the business after failing in trade; men, whose books showed them to be as ignorant of the laws of language as of other laws, have been dubbed Doctors of Laws—for what reason, unless it was a pecuniary one, it would be difficult to say. A bookwright of the lowest capacity, whose books were made wholly with the scissors, for years before his decease, wrote LL.D. after his name, and, we suppose, rightfully, though it would be hard to imagine what could have induced a college to confer it upon him. Peripatetic lecturers on some branch of physical science, have considered the LL.D. a desirable addition to their resources, and colleges have been found complaisant enough to confer it. An enterprising young man, in a neighboring city, who by dint of the "magnificently monotonous" style of advertising, had succeeded in creating for himself a large and flourishing business, and though possessing but an ordinary education, fancied that it would add to his *éclat* to be made a Doctor of Laws, and having, fortunately, a kinsman at the head of a *Female* College, speedily received from that source the right to put the magic letters after his name. We can hardly blame the young man for his aspiring ambition, however ill-placed we may deem its object; but what can be said for the college guilty of such a perversion of its university powers, and what moral right had a college or university, intended exclusively for female education, to confer degrees, which from their very nature imply the existence in it of a department of legal instruction? The demoralizing effect of such action is not confined to the institution which is guilty of it; it tends to the degradation of learning, by prostituting its honors and rewards to unworthy objects; and while such a course is pursued we may look in vain for any elevation of our higher education, or any earnest zeal in the prosecution of study, save as this brings to the student its own reward.

Public Will.

IN all places and countries, and under every form of government, public will, or the determination of the majority, is an element of power; but it holds supreme sway over us—socially as well as politically it is the controlling element of this Republic. It is proper that this should be the case, otherwise we should be no democracy. Those, therefore, whose duty it is to protect their special interest against its perverted uses, must take their chance of obtaining victory or suffering defeat from the encounter. He who strives to serve humanity as a remover of abuses must inevitably commence his attack with powers numerically inferior to those of his adversary; otherwise he can lay no just claim to the honored name of a reformer.

It may be said, that it is not the part of those engaged in scholastic affairs to canvass the shortcomings of the adult public will, the right tuition of which is strictly the province of the clergy. The force of this statement is admitted; and we are glad that the frivolity and immorality of the masses cannot be laid to the charge of the schoolmaster. But where a vitiated public will invades our proper specialty, we shall hold it to be our duty to defend the cause of the little ones and their instructors, whose organ we are, by every means in our power.

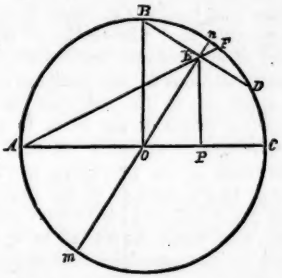
It was for this reason the article in our late number headed "Keys to Success in Scholastic Enterprises" was inserted. In other words, it was published to prevent the further immolation of the best interests of our children to the Moloch of Fashion. The careful reader of it will perceive that the evils complained of in it are not treated of as solely chargeable to our fraternity. To obtain a little money by amusing rather than instructing youth, is no very heinous sin, especially when such crime is committed to the inexorable requirements of the public will, which latterly has demanded show in place of reality, exhibition instead of instruction. We are aware that many very faithful teachers have battled in vain against the errors complained of, and it may also be our fate to see no present results from our endeavors. Nevertheless, with approving conscience and hope for the best, we intend to continue it. To that end, we purpose soon to examine the very important question of the reciprocal duties of parents and school teachers.

We should give as we receive, cheerfully, and without hesitation; there is no grace in a benefit that sticks to the fingers.

EDITORIAL MISCELLANY.

THE following beautiful construction and geometrical demonstration are well worth preserving.

The question in analysis is not considered difficult; but very indefinite ideas are entertained by many teachers concerning the disposition made of the infinitive "to mind," and we would like to have the question made determinate.



Approximate Quadrature of the Circle.

Radius is unity; let $AE=x$, and $EF=y$. BD is a chord of 60°; therefore, $BE=\text{Sine } 30°=\frac{1}{2}$, and $OE=\text{Cos. } 30°=\frac{\sqrt{3}}{2}$.

By Euclid III. 35, $mE\times En=AE\times EF=BE\times ED=\text{Sin}^2\ 30°=\frac{1}{4}=xy$; whence $y=\frac{1}{4}x$.

By Euclid II. 12 and 13, $AE^2=AO^2+OE^2+2AO\times OE\times OP=1+\frac{3}{4}+2\frac{\sqrt{3}}{2}\times\frac{1}{2}=1+\frac{3}{4}+\frac{\sqrt{3}}{2}=x^2$; whence

$x=1{,}6174131827\ldots\ldots$ and

$y=0.1545678016\ldots\ldots$ by addition

$x+y=1.7719809844\ldots\ldots=AF.$

Hence $AF^2=3.141592653\ldots\ldots$ nearly.

This result is so nearly exact, that the question arises whether the difference should be attributed to the construction, or to our inability to determine the exact value of $\sqrt{3}$.

PROBLEM I.

A piece of work was done by a certain number of men in a certain time. Had there been five men more, or four fewer, the time would have been altered by one day. What was the number of men?

PROBLEM II.

It is between one and two o'clock, and six minutes hence the minute-hand will be exactly opposite to the point where the hour-hand was seven minutes since. Find the time.

ANALYSIS.

How is the infinitive disposed of in the following sentence?

"Amid the hurry of battle, the soldier is too anxious to perform his own duty to mind what his brother soldier is doing."

EDITORIAL CORRESPONDENCE.

REVIEWER REVIEWED.

MR. EDITOR—My attention has been recently called to an article on Clark's Grammar, in the June number of your Monthly. The article in question evinces, at the outset, an entire want of self-consistency. It denounces Clark's definitions in unmeasured terms, forgetting that this is the cardinal sin of all the grammars, the immaculate Goold Brown not excepted. It complains that teaching grammar fails to make good practical grammarians, forgetting that nine-tenths of the current teaching of grammar is the product of systems and text-books that have been, from time immemorial, utterly oblivious of the analysis it condemns, and that the defect, therefore, is not due to the existence or influence of Clark's Grammar. It laments that pupils do not learn to give thought graceful and proper expression in words, evidently unconscious of the fact, that the evil is the natural result of the prevailing method of dwelling upon the mere parts of speech to the neglect of the inspiring and form-giving thought, an evil which Mr. Clark and his brother analysts are struggling to correct. It assumes that pupils cannot fail to be confused by the multiplicity and complexity of the principles and definitions, losing sight of its own previous declaration, that "pupils learn soon enough to take sentences to pieces," that is, to analyze them.

The article complains of Clark's Grammar as crowding distinctions, definitions, and principles in analysis, in unreasonable rapidity of succession, upon the pupil; when nothing is plainer, from a simple inspection of the accompanying exercises, than that if the work of practical application were carried out according to the author's design, the pupil's advancement would be eminently gradual and progressive. It accuses the book of being sadly deficient in providing for the practical work which belongs to a grammar, when the common complaint is that it gives the pupil so much of that work to do in connection with its analysis, that he neglects his "parsing;" and when every teacher, practically acquainted with its use, finds its demands in the direction of proper grammatical exercise (not rhetorical composition, which, the critic to the contrary notwithstanding, has no practicable or proper place in a grammar) so severe as to require an extension of the time usually devoted to the study of grammar. It represents the work of analyzing in connection with the illustrative diagrams, as the mere mechanical artifice of boxing up the disjointed parts of a machine, when it is altogether the logical work of determining the functional relations of those parts, and demonstrating the fact that they have been thus logically determined. A more gross misrepresentation of the nature of Clark's analysis, and the structure and office of his diagrams, can hardly be conceived. It implies that, in Clark's Grammar, the pupil is required to learn to give thought graceful and proper expression in words by merely *looking* at sentences presented for his examination and dissection, when a persistent and prevailing stress is laid, by its whole system, upon the actual analysis of the sentences presented, and their systematic and demonstrative presentation. Finally, it asserts that Mr. Clark constructs diagrams *like chests of drawers*, and then requires the pupil simply to select the sentence following, adapted to the diagram, and

to place it in an exact copy ; and *that he continues this process to the end*, making it the measure of the pupil's skill, when (would your readers believe it?) there is but a *single diagram, and a solitary sentence in the whole book*, to which any such direction is applied, and when nowhere is any such feat accepted as a test of the pupil's attainments.

But let us look at the matter of its philosophy, and its philosophical acquaintance with Mr. Clark's system. It objects, as will be seen, to Mr. Clark's selection for a first general illustration of the object of analysis, of the figurative passage, "God moves in a mysterious way," etc., as ridiculous, and calculated to give boys absurd ideas of God. Are the boys who study grammar so intrinsically stupid as the critic assumes, or are children, with their lively and ever present imagination, to be excluded from the use of figurative language without careful accompanying "note and comment?" Let us, then, guard them from the use of David's Psalms, lest they receive irreparable injury from reading "The mountains skipped like rams," and a hundred like highly figurative passages that go largely to make up the beauty of the Sacred Scriptures.

But passing from the matter of selections, the article attacks Mr. Clark's analysis as to its recognition of adjective and adverbial phrases, pronouncing them "logical absurdities." Avoiding his sad choice of highly figurative examples, it selects as its citation of "rich and rare device," the "House that Jack built," failing, either from *delicacy* or some other cause, to quote even that correctly in its third line. Here, according to Mr. Clark, it finds an adjective within an adjective! Well, why not an adjective within an adjective? Take the word *father-in-law*, and what is *law* but a noun within a noun ; or *whatever*, and what is *what* but a pronoun within a pronoun ; or *something*, and what is *some* but an adjective within a noun ; or *notwithstanding*, and what have you but an adverb, a participle, and another preposition within a preposition ; or more directly, *green-house plants*, and what is *green* but an adjective within an adjective? Does the author of that article know any thing of the composite nature of even English words, to say nothing of English sentences? But further, if we are to understand the article from its connection of things, and its use of the correlative term *adverbial phrase*, Mr. Clark finds adjective phrases throughout the whole passage, when the fact is, according to Clark's analysis, neither does a solitary adjective phrase follow the words *house, malt, rat, cat*, and *dog ;* nor are the major adjuncts depending on the words *cow, maiden, man*, and *priest*, adjective phrases.

As to the question of logical absurdity, how profound the assumption! What makes an adjunct element an adjective? It is not its being a *word*, for a word may be any of the parts of speech. It is not its being merely added to a noun or pronoun, for, in composition, *kind* may be added to the noun *man*, as in *mankind*, and not be an adjective ; or, in relation, *lives* may be added to the pronoun *he*, as in *he lives*, and yet lives is no adjective ; and so on indefinitely. What is it, then, that distinctly constitutes a term an adjective? Clearly, its function as modifying or limiting the signification of the noun or pronoun. Take now the expressions, *a wise man, a man of wisdom*, or *a man who is wise*, and what is the office of each of the terms *wise, of wisdom*, and *who is wise*, other than that of modifying or limiting the signification of the noun *man?*

Why are they not all, then, substantially adjectives? Oh! but they do not all accord with the phraseology of the definition, "an adjective is a *word* added," etc. What of that? Definitions are generally framed to suit the simpler and more radical forms of things, and for the sake of simplicity and generality; not at all because they are to exclude from the resultant classification all of the derived complex forms. A beam is "any large piece of timber, long in proportion to its thickness, and squared or hewed for use." Is, then, a "built-beam, which may be solid, consisting of several layers of timber laid in juxtaposition, and firmly connected together by iron bolts or straps," no beam at all, simply because it is not a single stick of timber? The truth is (has the author of that article ever learned it?) *elementary definitions must be general and adapted only to the radical forms or species*, under which the derived forms or species range themselves as modified subdivisions.

Suppose that the sentence is defined as "an assemblage of words so combined as to assert an entire proposition," what is the head and front of Mr. Clark's offending? Simply that as a clear practical thinker, he has given a practicable definition of the radical form or species of sentence, leaving the specific derived forms to be provided for as such. Hence, those derived forms, whether interrogative, conditional, imperative, or exclamatory, containing as they do substantially the same principal elements, and susceptible of reduction to the radical form as they are, are not ruled out of the category of the sentence at all, but are simply set further along in the classification as subordinates. Define a sentence according to the demand of the article in question, and we should have a monstrosity like the following: A sentence is an assemblage of words, or of words and phrases, or of words and sentences, or of words, phrases, and sentences, so combined as to express an affirmation, or an interrogation, or a supposition, or a command, or all five, and each either actual or potential, or positive and negative, and so on through all the possible complications of a periodic thought. But what sort of sense or science would this be?

As to the queries propounded, relative to the adverbial sentence, "before Cæsar had passed the Rubicon," and the relative pronouns in the adjective sentences, "to whom I gave it," and "for which I gave it," they evince an ignorance of analysis and an obliviousness of the necessary principles of substitution and representation, which would be past endurance and beyond explanation, were it not for the knowledge that the exclusive study of grammar according to the current etymological system and method, not only precludes the discovery of these higher truths, but tends also to such a practical paralysis of the logical faculty, as puts the more superficial minds beyond the power of comprehending them when demonstratively presented. It were easy to show that the conclusions reached in these instances, are not even "logical absurdities," but are mere illogical and absurd dicta. My space, however, does not allow me to undertake that work. I am similarly cut off from exposing the ignorance evinced with regard to Clark's diagrams, and the gross misrepresentation to which they are subjected. How much confidence can be reposed in what is urged against them, in the article in question, may be seen from what has already been shown with regard to its self-consistency, candor, and astuteness on these other points.

F. S. J.

MORE TROUBLES.

MR. EDITOR—To you, as an instructor of the public, I turn for information, and, I may add, counsel. I am in trouble, and know not where else to look for aid. My mind is so distracted that I can hardly state my case clearly. But bear with me while I "unfold a tale" as perplexing to me, if not as harrowing, as that related to the royal Dane on the midnight watch.

In the innocence of my heart I advertised to open a private school for mathematics and the higher English branches. I specified those studies to which particular attention would be paid, and announced in the plainest terms that my object was to give my pupils simply a thorough, practical English training. Instantly I was thronged; in the expressive language of Scripture, I was "beset behind and before" by applicants as teachers of all the things I did not intend should be taught in my school. The courteous but firm reply, "Mine is to be an English school," was of little avail. I have rejected a host of professors of French, Italian, Spanish, and Latin, though it almost broke my heart to do so. Not that I wanted their services, but they were all such excellent teachers. Each had a system very much superior to any other. Some had so perfected their plans that no time was necessary, except the hour devoted to the lesson, to enable pupils to speak a language fluently and correctly; and to prove the truth of their assertions, the applicants would at once begin to talk most glibly in the particular language they desired to teach. Such knowledge was too wonderful for me. Like Gough, I understand one Latin word, and that is "*ignoramus*." "*On ici parle Français*" is tolerably familiar to me, as I have so often seen it in windows of fancy stores; though for a long time, having heard so much of the superior comprehensiveness of the French, I supposed its meaning to be "Here no one parleys about price. We sell much lower than our neighbors. On! on to the French store and get a bargain." In Italian I had learned to pronounce "*Divina Comedia*;" and having in childhood found in the geography that "*Rio de la Plata*" means "River of Silver," and "*Terra del Fuego*" "Land of Fire," I felt competent to give necessary instruction in these languages myself.

But the drawing and painting teachers talked so eloquently! I was sorry Rosa Bonheur could not hear them. To my unitiated ear, their terms—with all respect be it said—were something of a jargon. But I looked wise and tried to commend, when they were trying to explain to me the superiority of their new methods.

Then the books that are sent me for examination! The postman comes with a market-basket on his arm. The express-man said to me the other day, as he leaned back, squinted one eye, and dexterously snapped a fly from the left ear of his horse, "Pretty good customer, ma'am. Them horses of mine stop here as regular's if I was a milkman."

I tremble at the ringing of the door-bell, and actually ran up to the attic as a peddler of vases and plaster images stopped at the door, fearing that he might be a teacher of a new system of drawing, with models for my inspection. I am getting restless and losing my appetite. What if I am wrong in thinking an English education the best thing for an Ameri-

can girl—in believing that the language of Shakespeare, and Milton, and Prescott, and Irving, has richness enough to require years of research, and more than enough to compensate for any labor bestowed upon its study? Is it better that a young lady should sing Italian and translate into execrable English—that she read the Vision of Dante in the original, and be ignorant of the fate of Ophelia, and unmoved by the touching lament of Lear?

If I am right, will the public sentiment sustain me? Or, what troubles me far more, shall I be permitted to conduct my English school after my own plan? If Mrs. Boffin chooses "to go in for fashion," I am perfectly willing; but let her leave the good old ways to those who differ. I think of adding to my advertisement a postscript in capitals, with the largest-sized N. B. before it, "English is the language of this school."

Now, if you have any counsel for me in my emergency, you will confer an inestimable favor by giving it as soon as you can, and thus oblige and perhaps save from insanity Yours, distractedly,

E. A. C.

A QUESTION IN PARSING.

FLUSHING, L. I., Oct. 9th, 1866.

MR. EDITOR—I observe that, in your notice of Welch's Analysis in the MONTHLY for October, you object to Mr. W.'s calling *who* an interrogative pronoun in the sentence, "I know who troubles you." He is not alone in this. Quackenbos, Eng. Gr., p. 68, calls it an "interrogative." Kerl, Com. Sch. Gr., p. 79, says it may, "in such cases, be called a responsive pronoun, or an indirect *interrogative* pronoun." Greene, Elements Eng. Gr., p. 49, Rem. 2, also calls it "an indefinite *interrogative* pronoun." Bullions, too, Lat. Gr., p. 79, Obs. 1, says, "All *interrogative* pronouns used in a dependent clause, and without a question, are indefinites." As an example he gives, "*Qui* sit aperit [*qui*, euphonic for *quis* (?)], he shows *who* he is." The word is certainly not a "relative" pronoun, as you suppose. It is not equivalent to *who* in the sentence, "I know not the man who troubles you;" where *who* evidently relates to *man* and serves to connect the two clauses. In the sentence you quote from Welch, *who* introduces the interrogative clause "who troubles you?" embodied in another sentence in such a way as to form the object of a transitive verb.

Hart, Eng. Gr., p. 58, and Bullions, Eng. Gr., p. 25, Obs. 4, call *who* in such a sentence "a responsive" (as indeed Mr. Welch does on p. 55), as though it was used thus only in answering a question. But it may be used as well in *asking* a question; as, "Do you know *who* speaks to-night?" "Do you know *who* he is?" For this reason, I think "indirect interrogative" the preferable name of the two, if not the correct one.

What is thus said of *who* may, of course, with equal propriety be said of the other interrogatives—*what* and *which*—in sentences like the following: "I know not *what* thou sayest;" "Have you any idea *what* became of it?" "I told him *which* of the books to get;" "He soon found *which* was the best." *What* in such instances can not be replaced

by *that*, *which*, or *the thing which*, as it may where it is used as a so-called "relative."

Foreigners, before becoming accustomed to our idioms, almost invariably use the *interrogative* form, in using these words, even when the idiomatic form is *declarative;* as, "Do you know *what is that man's name?*" instead of "Do you know *what that man's name is?*" This would seem to indicate that to their minds, *who*, *what*, and *which* are not, in such cases, "relatives," but "interrogatives."

Very truly, yours, etc., S. W. Whitney.

SCIENCE AND THE ARTS.

—Löwe has described a new sulphid of carbon obtained by the action of sodium amalgam upon the bisulphid. The semi-fluid amalgam is shaken with bisulphid of carbon in a well-corked bottle, the temperature of the mixture rises, and the process is complete when, after repeated additions of the bisulphid, heat is no longer evolved. If the mixture be then thrown into water, a blood-red solution is formed, which after filtration contains much mercury, which is to be removed by passing sulphuretted hydrogen through the solution. The solution, after filtration, is to be poured into dilute hydrochloric acid with constant stirring. A flocky red precipitate is separated which aggregates to a tough resin, while much sulphuretted hydrogen is given off. The resinous mass is to be continuously washed with hot water as long as the odor of the hydrosulphuric acid is perceptible. On cooling it becomes brittle, and yields a violet-brown powder which may be purified by solution in bisulphid of carbon, filtration, and evaporation. Analysis gives for this new body the formula C_2S_3H. Löwe regards the body C_2S_3 as a radical analogous to cyanogen or ethyl.

—Professor Thomsen, of Copenhagen, gives the following as the result of his investigations to determine the mechanical equivalent of light: A flame, the light of which is equal in intensity to that of a candle which consumes 8.2 grammes of spermaceti per hour, evolves per minute in the form of light a quantity of heat which would raise 4.1 grammes of water one degree centigrade. The mechanical equivalent of light reduced to mechanical measure may then be expressed as follows: The unit of work per second, or one kilogramme raised to the height of one meter per second, is equal to that contained in the rays of light which proceed per second from a source of light the intensity of which is 34.9 times as great as that evolved in a candle which consumes 8.2 grains of spermaceti per hour. This Prof. Gibbs (*Silliman's Journal*) regards as the maximum of the mechanical equivalent of light, and it may be reduced by later researches. Prof. Thomsen proposes to continue his investigations, using light of greater intensity.

—It appears that Canada is no longer entitled to be considered as the sole depository of the earliest fossil. Recent researches made by Prof. Hochestetter, of Vienna, have resulted in the discovery, in the calcareous limestone of the Krummau, of undoubted specimens of Eozoon, in all respects similar to those found in Canada.

EDUCATIONAL INTELLIGENCE.

EASTERN STATES.

VERMONT.—The University of Vermont and State Agricultural College has made arrangements for three new professorships and added materially to the philosophical apparatus, the collection of natural objects, and other means of illustration.

—On Commencement day Pres. Sears, of Brown University, announced that $100,000 had been, during the last year, presented to the college by a donation of $20,000 each from William Sprague, William S. Slater, Earl P. Mason, William H. Reynolds, Horatio N. Slater; and donations had also been received from Alumni residing in Massachusetts, amounting in all to $50,000. The donations from Massachusetts were made with the expectation that $100,000 in addition to the sums mentioned above would be subscribed by the Alumni and friends of the college, making a total of $250,000.

MASSACHUSETTS.—The whole number of graduates of Amherst College, for the forty-five years of its existence, has been 1681, of whom 697 have been ministers, and 70 foreign missionaries. 158 of her graduates and students were in the national service; 26 died in the war.

—At a recent meeting of the trustees of the Massachusetts State Agricultural College, it was voted to adhere to the selection of Amherst as the location of the college, and steps were taken for the erection of the buildings, which are not to cost over $50,000. The injunction restraining the town of Amherst from contributing $50,000 for the institution remains to be removed, however, before the building can go on.

—The new triennial catalogue of Harvard college contains the names of 7,786 graduates, of whom 2,772 or 36 per cent. are supposed to be living. All the Alumni are dead from 1642 until 1796, except Judge Samuel Thacher, of the class of 1793.

—There are now over twenty-two thousand volumes in the Springfield City Library.

MIDDLE STATES.

NEW YORK.—The trustees of Cornell University, Ithaca, N. Y., have concluded a contract for the construction of their first college building. It is to be a dormitory, 165 feet long, 50 broad, four stories above basement, entirely of stone; cost $57,425. It is designed to afford the requisite facilities for one hundred students, and to be completed by June 30, 1867. The Agricultural Department may be opened next fall.

—According to the twenty-fourth annual report of the Board of Education, there are in New York city 268 schools, including the Free Academy, Normal schools, Grammar Schools, Primary, Colored, Corporate and Asylum schools, and Evening schools.

During the year ending Dec. 31, 1865, $2,298,508 55 were deposited with the City Chamberlain for the purposes of education. The expenditure may be summed up as follows: Amount paid the City Chamberlain over draft in warrants issued in 1864, $86,533 77; salaries to teachers, janitors and officers, $1,482,177 84; support of Normal Schools, $6,781 33; rent of school premises and apportionment to corporate schools, and pianos for ward schools, $57,808 71; payments for building and repairing in ward schools prior to and during 1865, $311,139 78. This makes the total payments $2,377,988 69, which leaves an excess in warrants issued to be provided for from the fund of next year of $79,480 11.

The total number of scholars taught in these schools under the control of the Board of Education, and also the corporate schools, amounted during 1864 to 218,084.

In the year 1865 the total attendance at all the schools, including the Free Academy and the Normal, was 219,749, showing an increase over the previous year of 11,665.

The State School Tax paid by this city for the past twelve years, and the large proportion not returned, was as follows: Amount paid, $4,851,307 09; the amount apportioned to this county by the State during the same period, $2,594,491 05; amount retained by the State Government for distribution in other counties, $2,256,816 04. In the year 1856—ten years since—the total educational expenditure of this city amounted to $961,885 75.

Some idea of the magnitude of the evening schools may be gained from the fact that in the twenty-first ward two such schools have been opened for the ensuing winter, one with forty-five and the other with 53 teachers.

—The seventh annual report of the Cooper Union of New York city has just been issued. This institution was established by Peter Cooper. The original cost of the property as received by the trustees from him was $630,000, and since it came into their possession there have been expended $166,191, making the total cost thus far $796,191, all of which, excepting $1600, has been derived either from the founder or the revenues of the property. The institution includes a free night school for males and females, in which algebra, geometry, descriptive and analytical geometry, calculus, theoretical and practical mechanics, natural philosophy, and chemistry are taught; a school of art and a school of design for women. Twenty-seven instructors are employed in the various schools. The number of pupils who entered the night school was 1571, of whom 958 remained until the close of the

school year. Five students, having completed the five years' course of study, graduated this summer. The School of Design for Women was attended by 200 pupils. The free school of music had 400 pupils. Attached to the Union is a free library and reading-room, visited last year by 201,760 readers. The total expenditure for the year was $28,658 07.

NEW JERSEY.—Gen. N. N. Halstead, of Newark, whose noble liberality in relation to the College Observatory at Princeton is well known, has contracted for the purchase of a lot adjoining the Observatory lot, for $3,500, with a view of enlarging the College grounds, and probably for the erection of a building contemplated for the scientific department of the College.

WESTERN STATES.

MISSOURI.—The late H. Ames, of St. Louis, left by will $100,000 to the O'Fallon Institute—an institution of learning resembling the Cooper Institute of New York.

—One thousand acres of excellent land has been purchased and laid out, about one hundred and thirty miles below St. Louis, for an industrial orphan agricultural farm school. It abounds with fruit, timber, and coal.

KENTUCKY.—The Freedmen have thirty schools, with an attendance of 2,828 scholars.

KANSAS.—We take the following from one of our exchanges:

"A novel, and yet very worthy educational enterprise has been set on foot in Kansas, having for its object the establishment of an Industrial University for the Indians of our Western tribes. The project originated with the Ottawas, who are a partially civilized tribe, living on a magnificent reservation of land lying about twenty-five miles due south of Lawrence. Their chief, Mr. John Jones, is a thoroughly educated man, having a very intelligent white woman, who was originally a missionary, for his wife. They have both devoted their lives to the protection and elevation of the Indians. By a treaty consummated two or three years since, the Ottawas donated twenty thousand acres of land from the center of their rich reservation for the establishing of this University. Six hundred and forty acres of it are to be devoted to a farm connected with the institution, and are inalienable. The children of the Ottawas, no matter whatever part of the country they may have removed to, are to be perpetually entitled to education in the University. Its advantages are also to be extended to the other tribes of the West who may desire to enjoy them. Mr. Jones, the Ottawa Chief, has associated with him several other gentlemen, including the Rev. Mr. Hutchinson, the Government Indian Agent for the Ottawas, and they have already established a fine village of 1200 inhabitants on the land donated for the University, have built a church and a school house, established a weekly newspaper, and founded a flourishing community. They are now engaged in erecting one of the University buildings, designed to accommodate some fifty pupils."

SOUTHERN STATES.

DISTRICT OF COLUMBIA.—The Commissioner of the General Land Office reports 2152 acres located in Nebraska during August by agricultural scrip; also 18,720 acres in Minnesota during the same month.

—J. W. Alvord, Esq., Inspector of Schools and Finances of the Freedmen's Bureau, has submitted to the Commissioner his semi-annual report of the condition of the Freedmen's Schools in the United States. It represents that the total number of schools, exclusive of night schools, Sabbath, and private schools, in all the districts of the Bureau, is 975. The total number of teachers employed is 1,405; and the total number of pupils receiving tuition is 90,778. The State of Virginia is in advance of all the others in Freedmen's Schools, the number reported being 123 schools, 200 teachers, and 11,784 scholars. The Inspector says, in reference to the subject: "Amid all the embarrassment of these past months, the schools have steadily gained in numbers, attainment, and general influence. This is true, with a good degree of sameness, over all the States except Louisiana, where special causes have temporarily paralyzed our efforts. Teachers generally are becoming more apt and skilful in their instructions, and the rapid progress of pupils hitherto noticed, continues. The Associations of the North are increasing their patronage and funds, and concentrating their means in Central Agencies which promise greater economy and efficiency, and are now ready, with fresh hope, to co-operate heartily with the Bureau."

SOUTH CAROLINA.—Gov. Orr, in a special message, has recommended to the Legislature the acceptance by the State of the provisions of the Act of Congress of 1862, donating lands to States and Territories for establishing agricultural colleges. He intimates that the State can realize $150,000 from the sale of scrip.

—President Johnson is said to have given Bishop Potter his check for $1000, to increase the funds of the South Carolina Theological Institute.

TEXAS.—The following from the Houston *Telegraph* shows that the people of this State are more keenly alive to their interests than most of their neighbors. Referring to a recent outrageous attack upon a freedmen's teacher in Louisiana, it says:

"The attack, beating, kicking, and drag-

ging of Mr. Ruby seems to be entirely without excuse. He had but newly arrived, and his only offense was that of instructing his fellow-people of color. Yet his treatment was most cruel. A great many of these outrages have occurred in Louisiana. We are glad to know that the people of Texas have been much kinder to the colored school teachers, and while we could wish there was less prejudice toward them, still we congratulate ourselves that Texans have not disgraced themselves as have the people of Louisiana.

"We are beginning to recognize the fact that our comfort and perhaps our safety demand that the negro be educated and raised above his present abject condition. We believe that no personal violence has been offered to any teacher under the Bureau, either white or black. This argues for us a higher state of civilization than our neighbors enjoy. We believe that the colored schools of Texas are the most prosperous of those established in the Southern States. They are conducted without expense to the Government, being entirely supported by the blacks themselves."

—Governor Throckmorton, in his recent message, does not represent the condition of the State educational fund as at all encouraging.

FOREIGN INTELLIGENCE.

Ireland.—The twenty-third report of the Commissioners of Education announces that at the close of the year 1865 the number of schools in operation was 6,372, the average daily attendance of children was 321,309, and the average number on the rolls 598,408. There was an increase of 109 schools over the year 1864, and an increase in the daily attendance of 6,101. There are 45 national school houses in course of erection, and the model school. Of a total number of 675,835 pupils on the rolls of national schools for quarter ending 31st December, 1865, 551,006 were Roman Catholics, 45,026 Established Church, 74,424 Presbyterian, and 4,869 other persuasions. The total amount of salaries, etc., paid to teachers, assistants, monitors, and work-mistresses in national schools during 1865, was £252,248 18s. 2d. The total amount of receipts from all quarters during the past year, including a balance of £17,897 18s. 3d. in hand on the 31st December, 1864, was £369,594 7s. 10d., and the total amount of expenditures by the commissioners, £349,637 2s. 8d., leaving a balance in hand of £19,987 5s. 2d.

The Jews.—The Jews in Russia, and in the East, are reviving attention to education, and improving in all branches of learning. In Germany, a great agricultural school is in operation, in which many young Jews of wealth and station are studying the sciences, and learning practical operations in farming, with a view of applying their knowledge and skill to the soil of Palestine.

CURRENT PUBLICATIONS.

GENERALLY we take up a primary school-book without expecting to find much in it that is new, or an improvement on other books of the same class. And we are not often disappointed. But we find an exception in the little book[1] before us. This, if we mistake not, possesses features which will commend it to both teachers and parents. As in most primary arithmetics, numbers are first presented in connection with pictures; and the author is right in saying that these will cultivate the taste of the child and impart useful knowledge, besides assisting him in his first steps in numbers." The illustrations are really excellent, and in this respect the work differs materially from most books of the kind. Equal care seems to have been exercised in the construction of the examples. It is hardly possible that a child can study these without acquiring, in addition to the knowledge of numbers gained, an amount of useful information, not often found in elementary arithmetics.

The book possesses the further merit of being simple, and in no part too difficult for those for whom it was written.

The "Manual of Methods and Suggestions," occupying the last thirteen pages, contains hints that will be of use to most teachers of beginners.

Capt. Boynton,[2] having official access to records and possessing many advantages for obtaining correct information, has given

(1) French's First Lessons in Numbers. New York: Harper & Bros. Price 40c.

(2) History of West Point, and the Origin and Progress of the United States Military Academy. By Capt. Ed. C. Boynton, A.M., Adjutant of the Academy. New York: D. Van Nostrand. 8vo. pp. 408. $6.00.

us a history of West Point, and the Military Academy, which may be regarded as authentic.

West Point being the key to the upper Hudson, and commanding all communication between New England and the West, its importance as a military station was early recognized; and in the Revolutionary war, both the contending parties made strenuous attempts to secure it. In 1775, the Point and Martelaer's Rock, opposite, were appropriated by the Federal Congress, with consent of the Provincial Congress of New York, and fortifications were erected. The British plan of concentrating their forces at Albany and New York, and patrolling the river with sloops and cutters, was thus frustrated. In 1778, by order of Congress, a chain and boom of prodigious strength were stretched across the river, which at this point is only fourteen hundred feet wide, and moves very sluggishly. The boom was formed of huge logs, 18ft. long and 15in. in diameter, united by an iron band on each end, and a chain of two-inch iron in the middle. According to the bill of the contractors, 186 tons of iron were wrought into bolts, chains, swivels, and bands for this boom. The chain was equally massive, and is said to have weighed 186 tons. The average weight of the links which now remain is 114 lbs.

Capt. Boynton's account of Arnold's treason is well told, and is more detailed than that generally given, the letters found upon Andre, and the proceedings of the court-martial in the case of that unfortunate young man, being fully reproduced. These documents tend to place Andre in the most favorable light, and serve to increase our detestation of Arnold's ingratitude.

The necessity of a military academy appears to have been conceded at a very early period, for we find that in October, 1776, the Federal Congress appointed a committee of five to prepare a plan of such an institution. This committee never reported, and the academy was not formally established until 1802. In 1838 it was organized upon its present basis. Capt. Boynton gives details respecting the course and methods of instruction, showing that in grade, as a polytechnic school, the Military School is equal to any in America or Europe. Himself a graduate, he may be pardoned for his excessive admiration of the institution. The "History of West Point" is pleasantly written, and deals less in statistical detail than might be expected. The frank admission in the Preface restrains us from criticising its literary merits. It is well illustrated with maps and plates, and the frontispiece is an elegant lithograph of large size, representing the West Point of 1780.

The study of international law has never obtained its proper place in the college curriculum, partly because its importance is not appreciated, and partly, perhaps, because the text-books in general use are ill-adapted to their purpose. This should not be so. The subject is practically far more important than the speculations in metaphysics, which are so carefully studied. Most of the ordinary text-books should be discarded, and works of a different character substituted. Gen. Halleck's abridgment[3] of his larger treatise is a decided advance upon its predecessors. In comprehensive grasp, in terseness of style, and vigorous common sense it is far superior to any kindred work. Besides the topics usually discussed it contains a careful analysis of the laws of war. The necessity of this division was demonstrated by the ignorance of even our educated men during our late civil war. The author is afflicted by no morbid feeling of pity for the student. No cursory perusal will suffice for the preparation of a lesson; hard study will be essential. Indeed, the conciseness of the style will be found the only obstacle to its introduction; but this, so far from being a fault, is truly a virtue, and our book-wrights would do well to give us similar works on other topics.

Of the many popular works on natural history, comparatively few possess any great degree of merit. To the few, Mr. Wood has added one[4] which must take a high place. Assuming little previous knowledge on the part of the reader, he classifies animals according to their methods of constructing habitations. Thus we have the burrowers; those that suspend their homes in the air;

(3) Elements of International Law and Laws of War. By H. W. Halleck, LL.D. Philadelphia: J. B. Lippincott & Co. 12mo, pp. 380.

(4) Homes Without Hands. Being a Description of the Habitations of Animals, Classed according to their Principle of Construction. By the Rev. J. G. Wood, M.A., F.L.S. New York: Harper & Bros. 8vo. pp. 631. $4.50.

those that are real builders; those that make their habitations under the water; parasites; those that build on branches; and in the last chapter, miscellanea, or those that can not well be classed in the preceding groups. While the main object of "Homes Without Hands" is to describe the various habitations of animals, the work is full of interesting details concerning the habits of the occupants. In these Mr. Wood is careful to distinguish between fact and mere romance, so that in several places he ruthlessly destroys many notions cherished by us from childhood. We had regarded the owl and rattlesnake as the bosom friends and welcome housemates of the prairie dog, with which they formed a happy family. To our utter disappointment Mr. Wood denounces them as heartless intruders, devourers, seeking free board and lodgings. We were always overcome with admiration as we contemplated the self-sacrificing devotion of the rabbit and eider duck in stripping off their fur and down to provide comfortable resting-places for their young. But Mr. Wood is not romantic; he admires no such thing; he does not believe it. He maintains that these animals would undergo more self-denial if they should disobey their instinct, for so he terms the devotion, and asserts that the skin of the rabbit gives no evidence of irritation or inflammation after the plucking out of the fur.

"Homes Without Hands" is a work of rare merit. To overpraise it would be difficult. We have read it through, and have begun it a second time. We found not one page uninteresting or wanting in truly useful information. It contains many statements which if properly studied by agriculturists might be productive of great advantage to themselves as well as to the animals.

Elizabeth Twining's "Plant World"[5] is a strange book, not because of its subject but because of the manner of treating it. Never before have we seen a work on scientific matters so thoroughly suited to the wants of that large class of readers, who are neither children nor adults. The author aims to give general information concerning the structure and uses of plants, rather than to impart purely technical knowledge, and is successful. The moral teachings conveyed on each page are excellent and unobtrusive. On the whole the language is well chosen, though "these kind" and other equally objectionable expressions sometimes occur. The book has been published in elegant style, and is embellished with several illustrations in oil colors.

The main lack in the many pretentious biographies of President Lincoln is that they tell us little of the man. From the periodicals we know Lincoln the lawyer, politician, and President; from the biographer we seek a knowledge of Lincoln as he was in his family and among his friends. In his little volume Mr. Carpenter[6] gives the desired supplement. Wishing to produce a painting commemorative of the Proclamation of Emancipation, the author obtained permission to visit the White House, where he remained for six months. His book is not a biography, but a collection of incidents calculated "to portray *the man*, without any attempt at idealization." It contains also numerous historical scraps not generally known, among which is an interesting account of the Proclamation of Emancipation and the causes which led to it, received directly from Mr. Lincoln himself. The book is written in a style of undisguised affection and enthusiasm which renders it almost fascinating.

"Royal Truths" is the title of a book[7] which is made up from Henry Ward Beecher's published sermons, of such extracts as are fitted for standing alone. The history of the book has been given by the daily press. It was first published in London, without Mr. Beecher's knowledge. The selections are short and can be read when most books would not be taken up.

"The Kemptons"[8] is a well-written temperance story for the young. It is properly called "a tale of truth." Without improbable statements, it will hold the attention of the reader from the first chapter to the end. Teachers who make presents to their

(5) The Plant World. By Elizabeth Twining. London and New York: T. Nelson & Sons. 12mo. pp. 414. $2.50.

(6) Six Months in the White House with Abraham Lincoln. By F. B. Carpenter. New York: Hurd & Houghton. 16mo, pp. 350. $2.00.

(7) Ticknor & Fields, Boston. $1.75.

(8) M. W. Dodd, Publisher, New York. $1.25.

pupils would do well to select such books as this.

The same publisher[9] has issued a very pleasant story by Mrs. Lamb, entitled Capt. Christie's Granddaughter." This, too, is a well written moral tale for the young, and is worthy a place on the teachers' list of gift books.

Dr. Trall's book on Sexual Physiology[10] certainly gives evidence of much study, but whether profitable or not, those more familiar than we with medical matters must decide. The work is in a new direction, and discusses many subjects little noticed in most physiological treatises. It contains several novel theories upon the "law of sex." That of Sixt, which the author adopts, is quite well supported by facts, though, upon the whole, we cannot perceive that it is better substantiated than that of Thury, some time since published in Silliman's *Journal*. The chapter on "Regulation of the Number of Offspring" is rather eccentric, and, seeing that the work is intended for popular reading, contains some information which might have been omitted without injury. The chapter on "Philosophy of Marriage" is in several portions preposterous, and is out of place in a scientific treatise. Taken as a whole, this is the best work on esoteric man yet published for general circulation. However, no previous work that we have seen is worth reading.

Mr. Moens, who has gained a wide celebrity by his experience among the Italian brigands, has published an account[11] of his captivity. Aside from our interest in the author's afflictions, we find much that is attractive in the book. The information respecting the brigands, their manner of life, their opposition to the existing kingdom, and the disposition of the peasants, is worthy of note, and is entirely novel.

By the first series of "Spare Hours"[12] Dr. Brown fairly established his reputation as one of our most pleasing writers. His essays resemble those of the "Country Parson," but have less egotism, and are more instructive. Of the second series, some are practical, as the "Lay Sermons on Health:" others are anecdotes, well told and with excellent morals. The essay on Bibliomania, by J. S. Brown, is an able defence of a much ridiculed and equally wronged class. The "Jacobite Household" is a bit of domestic history illustrating Scottish life in the eighteenth century. It is well for Dr. Brown that his essays contain so much real worth, otherwise they would not be tolerated. The style is in utter defiance of all rhetorical and grammatical rules, and abounds in barbarisms of the worst kind. But these essays were evidently written without thought of critics or care for them, and we can only add our testimony in behalf of their sterling worth.

Mr. Babbit's system[13] of teaching penmanship seems to be eminently simple and practicable. He reduces the art to a few simple elements, and provides a systematic drill on these, avoiding every unnecessary mark and combination. With each copy are examples of errors which pupils are likely to fall into, while the accompanying explanations show how they are to be corrected and avoided. The plan is a good one; so too is that of having the copies on detached slips. With these the pupil can have his copy always before him, and next the line he is writing; and unless the teacher is very remiss, can never fall into the common habit of neglecting the copy and following his own writing after two or three lines have been written on a page. The plan of giving on the back of each slip a printed verse or note, or business form for the pupil to write, is also good, since it prevents the writing exercise from becoming one of mere imitation.

For the most part, the copies are well written and engraved. The principal faults noticed are too heavy shading of capitals, and an occasional attempt at originality which does not always result in an improvement on the simple and graceful letters of the elder Spencer. Legibility, however, is made a cardinal virtue of the system; and generally every line is cut off that does not tend to accomplish that end.

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(9) M. W. Dodd, Publisher, New York. $1.25.

(10) Sexual Physiology. By R. T. Trall, M.D. New York: Miller, Wood & Co. 12mo, pp. 312. $2.00.

(11) English Travelers and Italian Brigands. By W. J. C. Moens. New York: Harper & Bros. 12mo, pp. 355. $1.75

(12) Spare Hours. By John Brown, M.D. Second Series. Boston: Ticknor & Fields. 16mo, pp. 425.

(13) Babbitonian Penmanship. New York: E. D. Babbitt & Co. Price $1.50.

The *American Journal of Science and Arts* for September is more than usually interesting. C. M. Warren continues his new methed of Organic Analysis; Mr. Lea contributes a valuable article on the Action of Light upon Iodid of Silver. Profs. Bache, Newberry, Gray, Dana, Smith, Clark, Dewy, and Shepard also contribute to the number. The "Scientific Intelligence" is hardly as full as usual.

The recent improvements in our worthy contemporary, the *Herald of Health*,[14] are well sustained. It can now boast a list of contributors on subjects pertaining to its specialty—Physical Culture—unexcelled by any magazine in the country.

Among the many excellent agricultural papers, one, *The Rural American*,[15] aspires to be of national character. How well it maintains such a position, those acquainted with agricultural matters must decide. It is evident, however, that no farmer's family can read it without deriving benefit more than equal to the price of subscription.

(14) The Herald of Health, and Journal of Physical Culture. New York: Miller, Wood & Co. Price per annum, $2.

(15) The Rural American. Utica, N. Y.: T. B. Miner. Price per year, $1.50.

INVENTIONS FOR SCHOOLS.

NE PLUS ULTRA BOOK-HOLDERS.

EVERY one that has attempted to follow the advice of Jeffrey—always to read with pen in hand—has had occasion to regret that the great reviewer neglected to tell how he managed to hold his books while his hands were employed with pen and paper. Certain it is that one cannot long continue his method of reading—excellent though it be—without so severely taxing his patience and the muscles of his back as to make him covet at least one extra pair of the multitudinous hands of Briareus.

The thousand and one contrivances of wood, and leather, and wire, that have been devised for holding books open at such an angle that they may be easily read, and yet leave the reader's hands free to use a pen or pencil, are evidences of a popular want; and, for the most part, are unsuccessful attempts to meet it.

It would seem that every possible condition of cost and beauty and finish had been met, time and again; but the one great desideratum, something to hold a book of any size, firmly and smoothly open at any page, no matter how thick or thin either side may be, seems to have been left for Mr. D. J. Stagg, of this city, to devise. His recent invention, "The *Ne Plus Ultra* Adjustable Fingers," despite their clumsy name, are a clever contrivance for accomplishing with great simplicity and neatness the end desired. The cuts show some of the various styles of book-holders which he makes.

The "fingers" work independent of each other, so that it does not matter where the book is opened; it will be held smoothly and firmly in place at any page. We have seen and tried many styles of book holders, but none so simple and convenient as these. Some style of them should be on every reading-stand, and attached to every school-desk. It is useless to expect children to sit erect in school so long as their books lie flat upon the desk. Stand their books up so that they can be read without stooping, and then we may reasonably require them to maintain a proper position.